Complete
Instrumentation Solutions

Newsletter

STRUCTURAL TESTING & PAVEMENT CONDITION SURVEY EQUIPMENT

In this Issue:

- Network Survey Vehicle
- Road Doctor Maintenance Controller (RDMC)
- MALA Easy Locator Core
- Falling Weight Deflectometer
- Asphalt Pavement Scanner
- Bridge Inspection Vehicle
- Retro-Reflectometers
- Light Weight Deflectometer
- Structural Health Monitoring Sensors

STRUCTURAL TESTING AND PAVEMENT CONDITION SURVEY

Features

NETWORK SURVEY VEHICLE

- Transverse Profile & Rutting (rut depth, width, and cross-sectional area)
- Macro-Texture (MPD)
- Pavement images with defects automatically overlaid
- Automatic crack & defect detection
- Ravelling
- Concrete joints/faulting
- Roughness (raw longitudinal profiles and IRI)
- Road Geometry (Slope, Cross-fall, Radius of Curvature, and Super Elevation)

ROAD DOCTOR MAINTENANCE CONTROLLER

- Real-time road condition monitoring.
- Automatic cloud storage of all data with coordinates, eliminating the challenge of manual data entry while driving.
- Collection of valuable information on changes in road conditions across different seasons.
- Easier response to feedback from road users, with the ability to view the latest results and photos of specific road sections on a computer or cell phone via the web.

NETWORK SURVEY VEHICLE

The Network Survey Vehicle (NSV) from Data Collection Ltd., New Zealand, features the ROMDAS system, a comprehensive solution for road condition surveys. The system includes a high-resolution DMI, a high-accuracy GPS receiver, a 360-degree camera with mobile mapping software, and the upgraded Laser Crack Measurement System (LCMS-2), which operates at 28,000 Hz, significantly enhancing data collection speed and accuracy compared to the previous LCMS-1.

The LCMS provides substantial advantages over traditional Line Scan Cameras by recording high-resolution 3D road profiles instead of just 2D images. This allows for the accurate calculation of various pavement conditions, such as crack length, type, severity, depth, rut depth, pothole area, mean pothole depth, and concrete joint faulting. All detected defects are superimposed on 10-meter high-resolution images for detailed analysis.

This versatile and innovative system can be installed on almost any vehicle, allowing users to customize it according to the specific needs of their projects, avoiding unnecessary costs for unneeded components.

ROAD DOCTOR MAINTENANCE CONTROLLER

The RDMC system uses robust components designed for reconnaissance surveys, capable of acquiring and processing large amounts of data in real-time. This technology has been tested in Finland since 2018 across various road condition management and daily maintenance projects. One of its key benefits is the ability to detect problematic road sections during specific times of the year, such as the rainy season, and to track trends in road condition development.

The RDMC system includes the following components:
1. 3D Accelerometer
2. LiDAR
3. Camera
4. GPS

This system serves as an everyday tool for contractors and supervisors, offering real-time maintenance operations guidance and quality control. The RDMC system provides real-time information on:

- Ruts
- Potholes
- Roughness
- Crossfall
- Edge break/verges

STRUCTURAL TESTING AND PAVEMENT CONDITION SURVEY

MALA EASY LOCATOR CORE

The Easy Locator Core is a state-of-the-art ground-penetrating radar solution tailored for utility locating professionals. It excels in performance, consistently standing out in head-to-head comparisons. The system's cutting-edge acquisition software ensures unsurpassed data quality, while its high-quality mechanical design and meticulous attention to detail make it an unbeatable choice for customers.

This innovative radar solution revolutionizes the industry with MALÅ AI real-time interpretation support. The integration of MALÅ AI allows for precise pinpointing of individual objects through the use of AI-markers, significantly enhancing the accuracy of utility locating.

Moreover, these AI-markers are easily convertible to any standard markers, providing flexibility and compatibility with various industry standards.

VEHICLE MOUNTED FALLING WEIGHT DEFLECTOMETER

In technical collaboration with M/s KUAB, Sweden, we are offering the locally manufactured KUAB 70-150 SPGE Falling Weight Deflectometer (FWD). This device, mounted on an ISUZU DMAX commercial vehicle, is designed for user-friendly, single-person operation. The system features a closed-loop mechanism, with the software only becoming functional when the handbrake is engaged. This safety feature ensures that the vehicle remains stationary during testing, preventing any inadvertent movement.

A special safety feature is integrated into the vehicle-mounted version, ensuring that the handbrake cannot be released while the sensors and falling weight are deployed on the road. This precaution prevents the vehicle from moving until the falling weight and sensors are returned to the transport position, avoiding common damage caused by accidental vehicle movement during testing.

Additionally, the system is equipped with a segmented load plate designed to conform to the surface curvature under test, ensuring an even distribution of load across the plate's surface. The movement of the plate's individual segments is controlled through a common hydraulic chamber, enhancing the accuracy and reliability of the test results.

Features

VEHICLE MOUNTED FALLING WEIGHT DEFLECTOMETER

- Single-person operation.
- Available with 7 or 9 sensors and load capacities ranging from 70 kN to 150 kN.
- Provides a time history of load and deflections.
- Includes an automatic surface infrared thermometer and air thermometer.
- Equipped with an automatic distance meter.
- Comes with equipment for relative sensor calibration.
- Features GPS for location tracking.
- Includes a separate distance display for total distance traversed, distance to the next measurement point, and more.

MALA EASY LOCATOR CORE

- Optimized for locating utilities.
- Provides the fastest workflow on the market.
- Most cost-effective solution available.
- Delivers market-leading data quality.
- Capable of traversing any terrain.
- Features optimized weight and size.
- Includes unique features and algorithms.
- Offers wireless connectivity.
- Allows access to your data anywhere, anytime.
- Includes real-time interpretation support through MALÅ AI.

STRUCTURAL TESTING AND PAVEMENT CONDITION SURVEY

Features

ASPHALT PAVEMENT SCANNER

- Creates maps and histograms for dielectric, compaction, density, temperature, and roughness.
- Generates Word, PDF, and image outputs with Google Maps overlays.
- Operates in hand-held mode using the scan head and coupling cone.
- Wireless design avoids frayed cables and damaged connectors.
- Disassembles into three pieces for easy storage.
- Measures dielectric constant of gyratory compactor pucks for precise density and compaction calibration.

LIGHT WEIGHT DEFLECTOMETER

- Non-nuclear method lowers operating costs and handling risks.
- Provides immediate stiffness/modulus (E) results in both English and metric units.
- Measures impact force with an in-line load cell to reduce calculation errors.
- Uses a geophone for displacement measurement, reducing errors; includes a steel spring dampener for clean impacts.
- Simple, rugged design for single-person operation, with a lightweight, portable 2-wheel cart.
- Features user-friendly WinLWD acquisition and analysis software.

ASPHALT PAVEMENT SCANNER

The Asphalt Pavement Scanner uses advanced radar technology to measure the dielectric constant of asphalt pavements. By applying this constant, the scanner calculates compaction and density with specific calibrations for each asphalt mix, akin to Rice value calibrations. The device combines radar and infrared temperature sensors to continuously scan the pavement's surface, producing detailed maps of dielectric properties, density, compaction, temperature, and roughness.

These comprehensive maps improve quality assurance (Q/A) and quality control (Q/C) by providing a complete analysis of the pavement surface, rather than relying on isolated point measurements. This approach enhances accuracy and reliability, ultimately reducing risk and costs associated with pavement testing.

Additionally, the Asphalt Pavement Scanner eliminates the need for nuclear sources, thereby removing the associated safety training and licensing requirements.

LIGHT WEIGHT DEFLECTOMETER

The Light Weight Deflectometer (LWD-1) by Olson Instruments is a portable device engineered to measure in-situ soil modulus, ensuring that soil compaction requirements are met across various project areas, including subgrade, subbase, and road base. Designed and developed at Olson Instruments' corporate office in Colorado, USA, this lightweight deflectometer conforms to ASTM standard E2835-11, which governs plate deflection measurement under an impulse load. The device is used with a user-supplied tablet for easy operation and data management.

One of the key features of the LWD-1 is its ability to measure the actual impulse force, allowing for accurate calculations of soil stiffness and modulus based on the soil type, whether granular, clay, or mixed. This makes it a versatile tool for a wide range of applications, including road construction, airport runways, railway beds, overlot fill grading, parking lots, earth retaining walls, and earthen dams.

The LWD-1's portability and precision make it an essential tool for construction and civil engineering projects, providing real-time data that helps ensure the quality and durability of the constructed infrastructure.

STRUCTURAL TESTING AND PAVEMENT CONDITION SURVEY

RETRO REFLECTOMETER

The MiniReflecto is a versatile retro reflectometer designed for accurate measurement of retroreflection (RA) across materials like road signs and safety clothing. It can measure up to four simultaneous observation angles, with an adjustable entrance angle (β) for precise readings according to international standards.

The HORIZONTAL MiniReflecto specializes in measuring night visibility (RL), day visibility (Qd), and wet conditions visibility of road markings. Its patented optical system and CIE eye sensor ensure accurate measurements for various road marking materials, including profiled markings up to 15 mm, meeting global standards like EN1436 and ASTM.

For road studs, the MiniReflecto Road Studs measures the coefficient of luminous intensity (RI) with dual observation angles of 0.2° (or 0.33°) and 1°. This comprehensive device integrates vertical, horizontal, and road stud retroreflectometers into one advanced tool for all retroreflection needs.

NONUKE

The InstroTek NoNuke is a cutting-edge dielectric asphalt density gauge engineered for superior accuracy and reliability. Its advanced algorithm automatically alerts operators to moisture levels that could impact test accuracy. With strategically placed temperature sensors, the NoNuke continuously monitors its environment, ensuring optimal operating conditions and delivering the most precise results.

Designed for ease of use, the NoNuke features a lightweight, rugged exterior and intuitive software, making it ideal for harsh environments. The QuickTest button allows for quick readings, with results displayed on a large, sunlight-readable LCD. The NoNuke App, available for free on the Google Play Store, enhances functionality by enabling data capture, report generation, and easy sharing via any Android device. The app also includes GPS reporting, customizable reports, and a camera function for documenting test locations.

Unlike traditional gauges, the NoNuke eliminates the need for licenses, special transportation, or radioactive certifications, making it a hassle-free and efficient choice for asphalt density testing.

Features

RETRO REFLECTOMETER

- The lightest Retro Reflectometer on the market weighs just 2 kg, significantly lighter than the typical 6-7 kg units, making it easier to handle.
- Capable of recording over 100,000 readings, it can be operated directly, remotely, or via mobile, which is especially useful for field checks on damaged signage.
- The MiniReflecto Road Studs is the only Dual Angle retroreflectometer available globally.
- The new MINI model can take around 8,000 measurements per battery charge, using easy-to-replace AA batteries.

NONUKE

- Meets and exceeds ASTM D7113 and AASHTO T343 standards.
- No nuclear license or radioactive certification required.
- Includes a free Android app for project data. management and reporting.
- Faster, easier to use, and lightweight.
- Provides automatic excessive moisture alerts.
- Capable of storing large amounts of data with USB download functionality.

STRUCTURAL HEALTH MONITORING

ST350 Strain Transducer

The ST350 Strain Transducer is built for structural testing in harsh field conditions. These accurate, rugged, and fully weatherproof units can be quickly installed for various measurement applications.

STS4-4 Nodes

The STS4-4 nodes are 4-channel data acquisition devices with 4 analog and 4 temperature inputs. These 4th-generation, battery-powered, water-resistant nodes offer 40/15 hours of data collection, making them ideal for diagnostic testing. Intelliducer connectors simplify installation by automatically applying sensor settings and are compatible with BDI and most analog sensors.

STS4

The STS4 from BDI is a compact, wireless data acquisition system tailored for structural testing, offering efficiency and support for long-term monitoring. Designed by engineers, it features easy-to-use software with no programming required, extended range, POE support, and efficient power-saving modes. The system includes expanded sensor input ranges, auto-temperature compensation, and compatibility with existing hardware and software. Additionally, cost-effective Extension Nodes allow communication and power for up to 16 data channels.

ST350 Strain Transducer

Features

- Cost-effective
- Installs in under 5 minutes
- Reusable, lasts over 10 years
- Waterproof up to 20ft (6m)
- Industrial cable with custom lengths
- Standard millivolt output
- N.I.S.T. traceable calibration

Applications

- Steel
- Pre-stress/Post-tension concrete
- Reinforced concrete
- Timber
- Fiber Reinforced Polymer (FRP)
- Live-load testing & monitoring
- Laboratory testing
- Fatigue monitoring
- Tension rod forces

Tiltmeter

The T500 electrolytic tilt sensor offers high precision with mechanical offset adjustment, ideal for short-term testing. The T600 MEMS tilt sensors are better suited for long-term installations due to their temperature stability.

Accelerometers

The A1521 & A2521 Accelerometers are designed for dynamic structural testing in harsh field conditions. These accurate, rugged, and fully weatherproof units offer quick installation and are available in ranges from 2g to 100g.

STRUCTURAL HEALTH MONITORING

Strain Gage Completion Modules

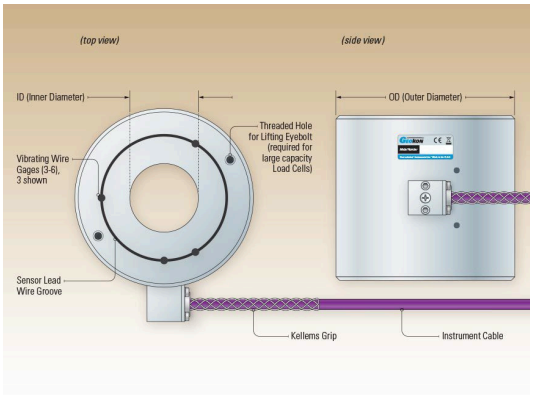
Available in 120Ω and 350Ω configurations with standard or amplified outputs, these rugged, reusable Strain Gage Completion Modules reduce field installation time. Only the lead wires from ¼-arm or ½-bridge foil gauges need to be connected to a waterproof connector.

Temperature Sensor

BDI Thermistor Probes, housed at the end of a cable, are ideal for measuring heat of hydration in concrete and RCC dams. They feature a negative temperature coefficient (NTC) for detecting small temperature changes and respond quickly due to their small size.

VV Load Cells

The Model 4900 Vibrating Wire Load Cell consists of a cylinder of high-strength steel with 3, 4 or 6 vibrating wire strain gages located around the circumference of the cell. Loads applied to the cell are measured by the vibrating wire strain gages. The effects of uneven and eccentric loading are minimized by averaging the output of all 3, 4 or 6 individual readings.



Displacement Sensors

Our selection includes LVDTs, cable potentiometers, resistive displacement transducers, and ultrasonic sensors. This range ensures flexibility for various structural deflection monitoring needs, from precise measurements in controlled settings to rugged conditions requiring reliability.

Automatic Load Position Tracker

This device uses wireless technology to track the loading vehicle's position, capturing data based on load rather than time. It provides detailed insights into structural behaviour under varying loads, improving analysis accuracy and aiding decisions for repairs and enhancements.

Features

Temperature Sensor

- Robust for harsh environments.
- Quick response to temperature changes.
- PVC housing resists chemical degradation.
- Surface mount models attach with BDI Mounting Tabs or screws.
- High-temperature stainless steel versions available.

VW Load Cells

- Rated Capacities: 100 to 10,000 kN
- Over Range: 150% F.S.
- Resolution: 0.025% F.S.
- Accuracy: ±0.5% F.S.
- Temperature Range: 20°C to +80°C
- Internal Diameters: 25, 50, 75, 100, 125, 150, 200, 250 mm

Displacement Sensor

- Input Range: 6 to 18 Vdc
- Construction: Stainless steel
- Armature: Spring return
- Cycle Life: High
- Accuracy: High
- Resolution: < 0.0001”

Automatic Load Position Tracker

- Enclosure: Rugged machined aluminum
- Weatherproof
- Encoder: Quadrature, <1% accuracy
- Radios: 900 MHz & 2.4 GHz
- Range: >1 mile
- Mounting: Universal bracket

STRUCTURAL HEALTH MONITORING

Features

BRIDGE INSPECTION UNIT

- Platform length up to 23 meters.
- Maximum payload of 600 kg on the platform.
- Maximum payload of 300 kg on the telescopic platform.
- 180° rotation range under the bridge.
- Maximum lowering depth of 8.5 meters.
- Maximum overbridging of 2.85 meters over a sidewalk.
- Maximum crossing height of 2.0 meters to 3.2 meters for sound barriers.

STS-LIVE Software

- Seamlessly configure STS4 hardware.
- Select real-time viewing and filtering options.
- Customize test lengths and rates.
- Adjust excitation voltages and sensor gain.
- Simplify setup with automatic or manual zeroing.
- Enjoy automatic temperature compensation.

STS-VIEW Software

- Import, merge, and decimate raw data files.
- Apply gage/correction factors to sensors or data files.
- Filter spikes and noise with graphical comparison.
- Compute average sensor responses for axial force.
- Compare data with WinSAC and Strand7 for model accuracy.

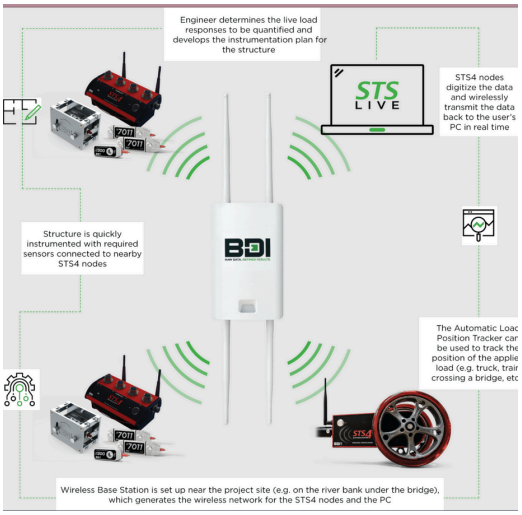
BRIDGE INSPECTION UNIT

The “ABC line” products are engineered for the inspection and maintenance of road bridges, offering a safe, quick, and cost-effective alternative to traditional scaffolding. These units, mounted on standard trucks or trailers, can be deployed from their rest position to the work position within minutes, eliminating the need for personnel on board during the setup process.

Once the platform is in place, operators can safely descend onto it via a protected access point, allowing them to perform their tasks efficiently. Communication with personnel on the bridge deck is facilitated through an intercom system. . The platform itself, depending on the model, ranges in length from 5 to 23 meters, providing ample working space for a variety of tasks. This platform is deployed using sophisticated proportional controls and a reliable hydraulic power supply, which ensures precise and smooth operation, even under challenging conditions.

STS-LIVE Software

Leveraging our latest STS4 hardware, we introduce the STS-LIVE application, designed for versatility with the user-friendly interface of WinSTS. Data collection starts instantly with Intelliducer nodes, and terminal node configuration is simplified with intuitive drop-down menus for quick setup and operation.



STS-VIEW Software

STS-VIEW is an interactive graphing application tailored for analyzing data from STS4 data acquisition systems. Instead of spending extensive time on spreadsheet formulation and verification, engineers can swiftly interpret responses using STS-VIEW's intuitive features. The application allows users to view data based on various parameters such as time, load position, load event, or specific sensor measurements, streamlining the analysis process.

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